

What Is Claimed Is:

1. An image sensor for capturing images, comprising:
  - a pixel array where pixels having photoelectric
  - 5 conversion elements are arranged in a matrix;
  - a plurality of row select lines which are arranged in a row direction in said pixel array;
  - a plurality of column lines which are arranged in a column direction in said pixel array;
  - 10 a sample hold circuit disposed in each one of said column lines;
  - a vertical scan circuit for generating vertical scan signals to sequentially select said plurality of row select lines; and
  - 15 a horizontal scan circuit for generating horizontal scan signals to sequentially select an output of said sample hold circuit,
  - wherein said vertical scan circuit sequentially selects and scans said plurality of row select lines within a first
  - 20 vertical scan period when said image sensor is controlled to a first frame period, and also sequentially selects and scans said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame
  - 25 period.

2. The image sensor according to Claim 1, wherein

said horizontal scan circuit generates said horizontal scan signals while said vertical scan circuit selects each one of said row select lines, and said horizontal scan circuit does not generate said horizontal scan signals when said vertical scan circuit does not generate said vertical scan signals.

3. The image sensor according to Claim 1, wherein said pixel comprises a photoelectric conversion element, a reset transistor, a source follower transistor, and a selecting transistor which is controlled by said row select lines.

4. The image sensor according to Claim 1, wherein said first vertical scan period is a period which is a part of said first frame period.

5. An image sensor for capturing images, comprising:  
a pixel array where pixels having photoelectric conversion elements are arranged in a matrix;  
a plurality of row select lines which are arranged in a row direction in said pixel array;  
a plurality of column lines which are arranged in a column direction in said pixel array;  
a sample hold circuit disposed in each one of said column lines for sample holding photoelectric conversion signals of said pixels;  
a vertical scan circuit for generating vertical scan

signals to sequentially select said plurality of row select lines; and

a horizontal scan circuit for generating horizontal scan signals to sequentially select an output of said sample hold circuit while each one of said row select lines is selected,

wherein said vertical scan circuit sequentially selects and scans said plurality of row select lines within a first vertical scan period when said image sensor is controlled to a first frame period, and also sequentially selects and scans said plurality of row select lines within said first vertical scan period even when said image sensor is controlled to a second frame period, which is longer than said first frame period.

6. The image sensor according to Claim 5, wherein said vertical scan circuit does not output said vertical scan signals after said first vertical scan period in said frame period has elapsed.

7. An image sensor for capturing images, comprising:  
a pixel array where pixels having photoelectric conversion elements are arranged in a matrix;

a plurality of row select lines which are arranged in a row direction in said pixel array;

a plurality of column lines which are arranged in a column direction in said pixel array;

a sample hold circuit disposed in each one of said

column lines for sample holding photoelectric conversion  
signals of said pixels;

a vertical scan circuit for generating vertical scan  
signals to sequentially select said plurality of row select  
5 lines; and

a horizontal scan circuit for generating horizontal scan  
signals to sequentially select the output of said sample hold  
circuit while each one of said row select lines is selected,

wherein said vertical scan circuit sequentially selects  
10 and scans said plurality of row select lines within the  
vertical scan period which is a part of the frame period, and  
does not select said row select lines outside said vertical  
scan period in said frame period.

15 8. The image sensor according to one of Claims 1, 5  
and 7, further comprising:

a line buffer for storing one row of output of said  
sample hold circuit; and

an image processor for inputting an output of said line  
20 buffer,

wherein in the horizontal scan period, an output signal  
of said sample hold circuit is stored in said line buffer  
responding to said horizontal scan signal, and said output  
signal in said line buffer is output to said image processor  
25 responding to an output clock with a cycle longer than said  
horizontal scan signal.

9. An image sensor for capturing images, comprising:  
a pixel array where pixels having photoelectric  
conversion elements are arranged in a matrix;

a plurality of row select lines which are arranged in a  
5 row direction in said pixel array;

a plurality of column lines which are arranged in a  
column direction in said pixel array;

a sample hold circuit disposed in each one of said  
column lines for sample holding photoelectric conversion  
10 signals of said pixels;

a vertical scan circuit for generating vertical scan  
signals to sequentially select said plurality of row select  
lines;

a horizontal scan circuit for generating horizontal scan  
15 signals to sequentially select the output of said sample hold  
circuit when each one of said row select lines is selected;

a line buffer for storing one row of output of said  
sample hold circuit; and

an image processor for inputting an output of said line  
20 buffer,

wherein in the horizontal scan period, output signal of  
said sample hold circuit is stored in said line buffer  
responding to said horizontal scan signal, and said output  
signal in said line buffer is output to the said image  
25 processor responding to an output clock with a cycle longer  
than said horizontal scan signal.